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AUTHOR Reed, Dorothy D.
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ABSTRACT

This report summarizes the findings of a survey of all permanently assigned personnel at the Air University at Maxwell Air Force Base (Alabama) to determine what future workplace technologies will be needed to support the university's two major programs, Professional Military Education (PME) and Professional Continuing Education (PCE). The objectives of the study were to determine exactly what personnel perceived their needs to be for a local area network; for future technologies for presenting PME and PCE curricula; and for achieving the necessary staff work of support organizations. There were 1,211 respondents who provided information on: (1) their willingness to accept technology advances; (2) potential workload savings by automation; and (3) specific equipment and software requirements. The survey data were also designed to permit future mapping of external and internal data flow at the Air University. The text is supplemented by seven figures and six tables, and four appendices include a copy of the survey questionnaire and analyses of the data for individual questions. A descriptive analysis of future technological needs in a military university based on this study is attached. (EW)

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FUTURE TECHNOLOGIES

NEEDS ANALYSIS

An
Air University Staff Report

By
Dorothy D. Reed, Ph.D
Chief, Institutional Research
Institutional Research, Evaluation and Technology
(AU/XPZ)

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INTRODUCTION

Air University presents Professional Military Education (PME) and Professional Continuing Education (PCE) to Air Force officers, noncommissioned officers, and civilians throughout the Department of Defense and some other federal components. A thorough needs analysis is a basic requirement for any major Air Force purchase. Therefore, in an effort to get a complete picture of what our future workplace technologies should include at Air University, a survey was administered to all permanently assigned personnel. Objectives of the study were to determine exactly what personnel perceived their needs to be for a Local Area Network (LAN), for future technologies needed for presenting PME and PCE curricula, and for achieving the necessary staff work of support organizations. There were 1211 respondents who completed the survey and provided perceptions of technological needs, the savings possible by using these capabilities, and their attitudes toward the use of technologies to accomplish their jobs. Future analysis of the survey data will also allow mapping of the external and internal data flow at Air University.

This is only one in a series of planned efforts to make Air University become the completely automated university needed to serve its worldwide student population. Survey information can be stratified by whether respondents are officers, NCOs, or civilians; by organization or school to which individuals are assigned; and by the type of job they perform. Respondents indicated the frequency with which they would anticipate needing 17 different advanced technologies. The survey also addressed requirements for protection or confidentiality of information, the tolerable downtime acceptable for automated information systems indifferent organizations, and expected information growth in the different organizations.

FUTURE TECHNOLOGIES: INFORMATION NEEDS SURVEY ANALYSIS

I. PURPOSE, PARTICIPANTS, AND RESPONSES

PURPOSE: To gather data on future information needs, the perceptions of personnel about future technologies, and to "map" data flow requirements for Air University, a survey was administered to personnel at Maxwell AFB and Gunter AFS AL. (Appendix I)

PARTICIPANTS: The survey was sent to 2199 individuals in December 1984 and January 1985. Because of the desire to "map" data flow, the objective was to have as near 100 percent participation of all permanent managerial, faculty, staff, administrative, and clerical personnel as possible. (PCS students at AWC and ACSC were not included.) Surveys were sent to all AU components as well as to the Hospital, 1973 Communications Squadron, HQ CAP-USAF, and 3800 ABW. (See Appendix II for actual distribution list.)

RESPONSES: Approximately 100 surveys were either returned or information was provided that people had retired, moved, or positions were not all filled. Therefore, 2099 (2199 - 100) surveys were distributed and 1211 usable responses were received giving a response rate of approximately 58 percent (57.7). No attempt was made to "control" the number of surveys distributed since we encouraged everyone who was interested to respond. Returned surveys were accepted throughout the summer of 1985. The number of responses by organization is shown in Table 1 below.

TABLE 1

NUMBER OF RESPONDENTS BY ORGANIZATION	
N	Organization
94	Air War College
130	Air Command and Staff College
94	Squadron Officer School
63	Leadership and Management Development Center*
45	Air Force Senior Noncommissioned Officer Academy
67	Educational Development Center*
195	Air University Headquarters
38	Air University Library
74	Extension Course Institute
44	Center for Aerospace Doctrine, Research, and Education
65	Civil Air Patrol-USAF
277	Other (Hospital, Wing, Communications Squadron, etc.)
25	No organization indicated
1211	TOTAL

* Two organizations now combined to form Center for Professional Development

II. WILLINGNESS TO ACCEPT TECHNOLOGY ADVANCES

Current Use of Equipment

Of those surveyed, 28.4 percent already have microcomputers at home (Item 5). Though only 5 percent of these were Zeniths (the brand most predominate at Maxwell and Gunter), the assortment found in Item 6 (7 percent IBM, 20 percent Apple, 38 percent Atari or Commodore, and 30 percent "Other" brands) indicates there may be a fair amount of transferable microcomputer knowledge on base and, therefore, a willingness to accept advantages offered by microcomputers. Most of the people (66.5 percent) have some expertise with microcomputers (Item 8). At least 52.3 percent, were at least "moderately" familiar with recent technological advances in information transfer and processing (Responses C, D, and E, Item 7).

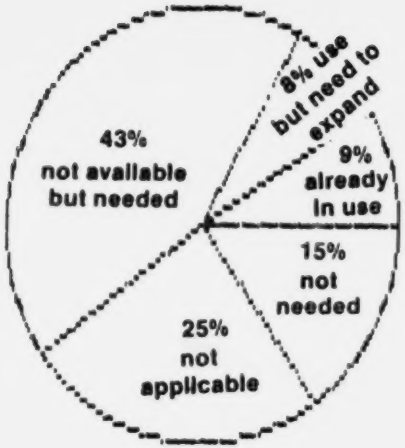
Though 41 percent of the people did not use anything more advanced than an electronic typewriter (Item 13) in their job, Air University may be able to minimize future training programs. A respectable number of automated technologies are already in use at Air University. For example, 53.4 percent use word processing, 32.9 percent use database management, 27.4 percent use information retrieval systems of some sort, and 17.2 percent use computer-assisted instruction. The five pie charts in Figure 1 summarize the perceptions of respondents regarding their professional uses of automated technologies to accomplish their jobs.

According to Item 34 of the survey, 70 percent of the people could probably take a commercial software package now and make it run using only the instruction manuals provided. Also, 58 percent of the people could get microcomputer assistance either in their immediate work area or within a convenient distance in their building (Item 35). For the 58.7 percent who used equipment other than electronic typewriters, the type of the equipment in use is illustrated in Figure 2 (Items 14-17).

Attitudes

The majority of the people (54 percent) believe their boss views learning to use the computer as a valid part of their job (Item 9). Additionally, 70 percent of those surveyed personally view learning to use computers as a valid part of the job (Item 10). Only 2 percent viewed learning to use computers as a waste of their time. That 2 percent (a total of 23 people), is distributed among all ranks as shown in Table 2. Thus it appears that today even upper level personnel view learning to use computers as a requirement. Forty-two percent of the individuals surveyed were supervisory personnel while 58 percent were non-supervisory (Item 12). Figure 3 gives a view of those surveyed by primary job categories.

Only about 3 percent of the respondents (34 people), indicated they did not want to take the time required to learn the basic operation of automated equipment (Item 36). Some people (12 percent) were not looking forward to learning, but realized they needed to. Some people (27 percent) indicated



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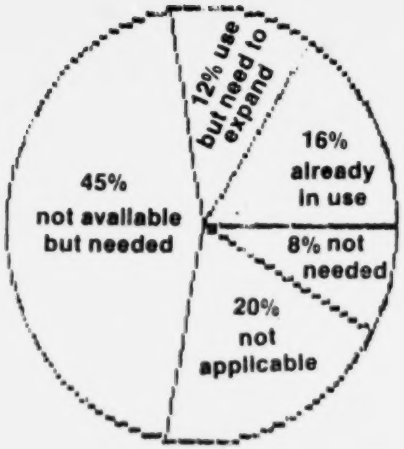
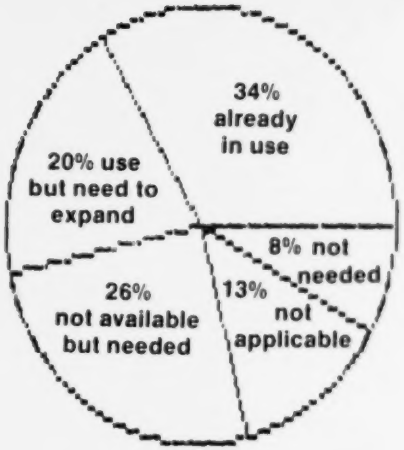
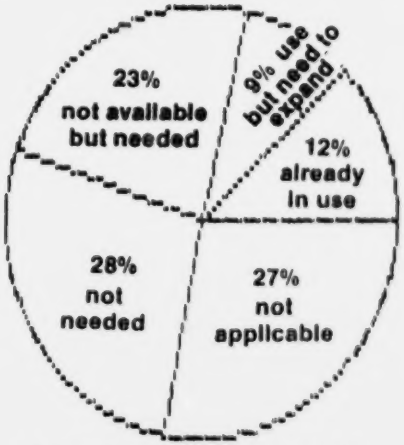


INFO RETRIEVAL

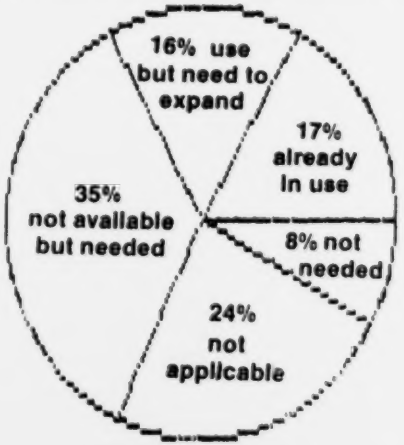


WORD PROCESSING

PROFESSIONAL USES OF AUTOMATED TECH



MATH COMPUTATION



DBASE MGMT

FIGURE 1

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FIGURE 2: CURRENT USE OF TECHNOLOGY

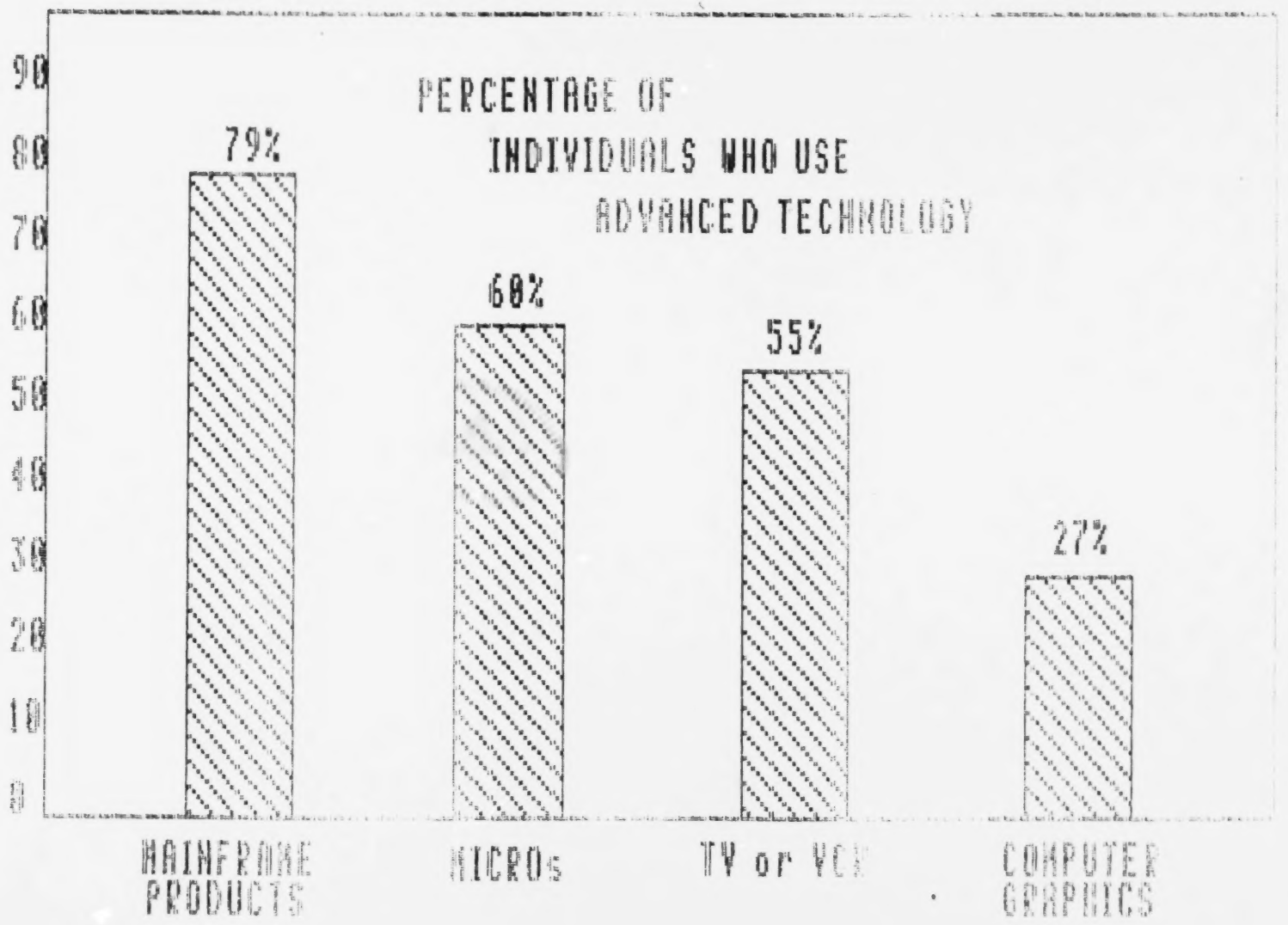

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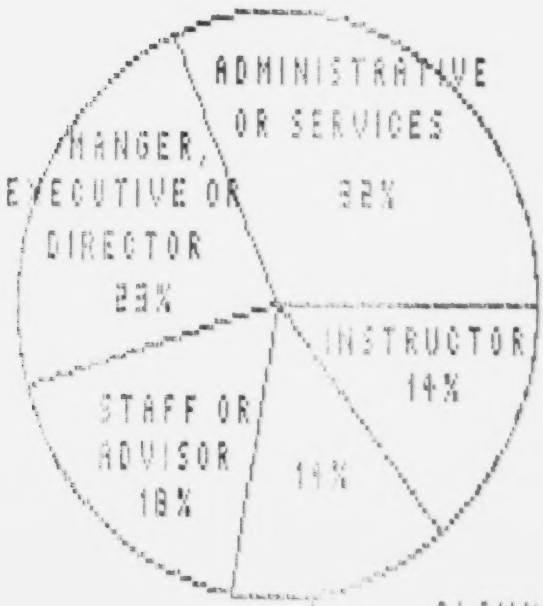
FIGURE 3

SURVEY RESPONDENTS BY PRIMARY JOB TYPE



they were a little awed by the technology, but looked forward to learning, while 48 percent said, "I am already learning or am really looking forward to learning more." A respectable 10 percent said, "I am already very familiar with such equipment." Of the total respondents, 60.5 percent (Item 40) indicated time could be saved by automating the information flow in their office. Only 10.8 percent said it would take more time than it would save to automate, and 28.8 percent said they did not know how much could be saved or that automation was not applicable to them.

TABLE 2

DISTRIBUTION BY RANK OF RESPONDENTS

(Q10) "Personally, learning to use the computers...a waste of my time"

RANK	FREQUENCY
O1-O3	4
O4-O5	6
O6 or >	1
E4-E6	5
E7 or >	2
GS7 or <	1
GS8-12	1
GS/M 13-15	1
WG7 or >	1
No rank given	1
	N = 23

III. DESCRIPTION OF PRESENT WORKLOADS

Letters, general correspondence, reports, and forms account for 66 percent of the paper work done by those surveyed (See Figure 4).

There are approximately 24,000 pages of "written" materials "worked on per day" by those surveyed (Item 19). This includes 7,345 pages for officers, 4,345 pages for enlisted, and 12,225 pages for civilians; for total of 23,915 pages written materials per day.

If each of these pages is worked on or reviewed for an average of three minutes, a total of 71,745 minutes per day (23,915 x 3) is spent in this type activity. This represent 1,196 manhours or 148 mandays!

The average length of the written documents produced varies greatly (Item 20). About 14 percent are 10 or more pages, 10 percent are 5-10 pages, while as expected, most documents are relatively short (40 percent are 2-4 pages and 19 percent are 1 page). This survey provided not only the average length of the documents "produced," but also an estimate of the total number of pages

FIGURE 4

TYPE DOCUMENTS PRODUCED MOST OFTEN

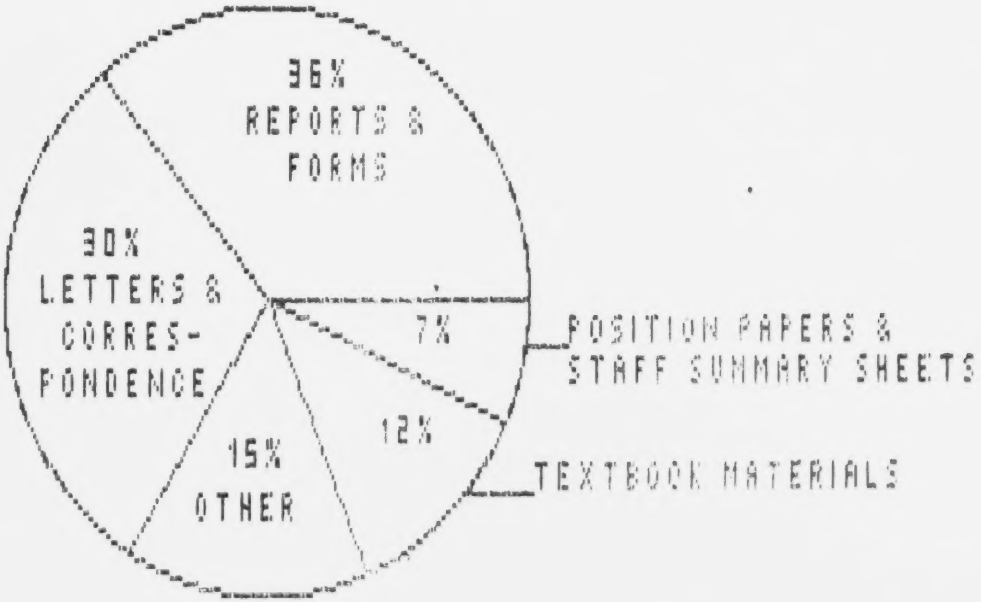
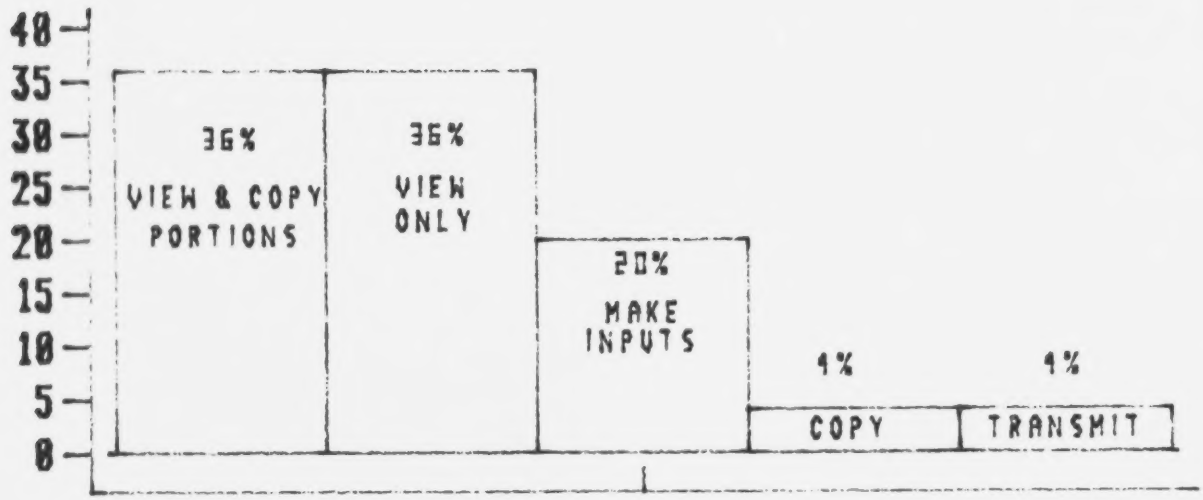


FIGURE 5

TYPE OF ANTICIPATED DATABASE USE



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"reviewed" per work day. At least 7,160 pages of new documents are "produced" per work day (Item 21). Approximately 10,419 pages of documents are "reviewed" (by someone other than the producer daily). Approximately 3837 pages of typewritten materials are transmitted between the offices on base per day Item 39). The figures above were obtained by multiplying the midpoint of the response categories on the survey times the frequency for each category and summing those subtotals to get the total number of pages. For the upper category, i.e., "More than 15," the starting point of 15 was used. Thus, the totals represent extremely conservative estimates.

The survey (Item 28) revealed that there may be at least 2320 separate databases maintained at Maxwell and Gunter. However, it is likely that there may be overlap here. More than one person may consider themselves "maintaining" a single data base.

TABLE 3

NUMBER OF DATABASES MAINTAINED

Databases Maintained	Frequency of Response	Total Number
0		
1	93	93
2	99	198
3	79	237
4 or more	448	1792
	TOTAL	2320

The survey also provided estimates of the number of pages in these databases, how often they need updating, how often they are used, whether logs of use would be required, and what most people would do with these databases. The number of pages required for 57.2 percent of the databases was 25 pages or less. A conservative estimate of the total number of pages of materials in these databases is 12,780. Approximately 60 percent of the databases need to be updated daily or weekly. Estimations reveal that 66 percent are referred to daily, 20.1 percent weekly, 6.3 percent monthly, 4.2 percent quarterly, and 3.5 percent annually. Most people (77 percent) do not need to keep logs on database use (Item 32). Anticipated use of databases by category is summarized in Figure 5.

IV. OPINIONS OF POTENTIAL WORKLOAD SAVINGS BY AUTOMATION

The 1185 individuals who responded to Item 38 of the survey "transmitted" 3,837 items (staff summary sheets, forms, reports, items of information, etc.) per day. While we can not assign a dollar figure to the capability to transmit documents instantaneously, the efficiencies to be gained are obvious. As stated above in Part I, 11 percent of the respondents thought automating the information flow in their offices would probably take more time than it would save and 30 percent didn't know how much could be saved. We assigned cost savings for those who did estimate time savings (Item 40).

Though no one can accurately calculate the time which can be saved by automation, we know there are efficiencies to be gained, and we can look at the tasks which could be streamlined. When asked "How much time per day you spend on the following tasks?" an extremely conservative estimate shows that the 1,211 respondents spent at least 4,339 hours per day (Items 41-46) searching files, filing, scheduling appointments, taking telephone messages, editing, and changing the format of information. These work efforts can be greatly streamlined by technology. Using a ridiciously low savings of 10 percent for total automation of such functions, a potential savings of 434 hours per day or 54 mandays could be saved by automation!

Individuals were asked "For your position alone, how much time could be saved if the above services were available?" (Item 64). Detailed analysis of responses provided the estimates of potential manpower savings for AU in Table 4.

TABLE 4

POTENTIAL MANPOWER SAVINGS					
Manhours per week	1353.5	Officer	Cost	$ 35,556	
	644.0	Enlisted		7,476	
	557.0	Civilian		7,363	
Manyears per year	33.84	Officer	Cost	$1,706,709	
	16.10	Enlisted		358,888	
	13.93	Civilian		353,450	
Total Manyears	63.87		Cost	$2,419,048	Per Year

A more detailed description of these analyses is at Appendix III where an "All-AU" analysis is followed by a "By-Organization" analysis for this item. Extreme caution should be exercised when considering these data for they are truly estimates of the unknown! Whether or not approximately 64 manyears per year could be saved depends on no simple formula.

V. MAPPING INFORMATION FLOW

Items 90 and 91 of the survey were designed to allow mapping the information flow within and outside Air University. These data have been captured including office symbols and building numbers. We can describe for each respondent the offices to which they most often send materials and those from which they most often receive materials both within and outside AU. Figure 6 illustrates only a small portion of these data.

FIGURE 6A

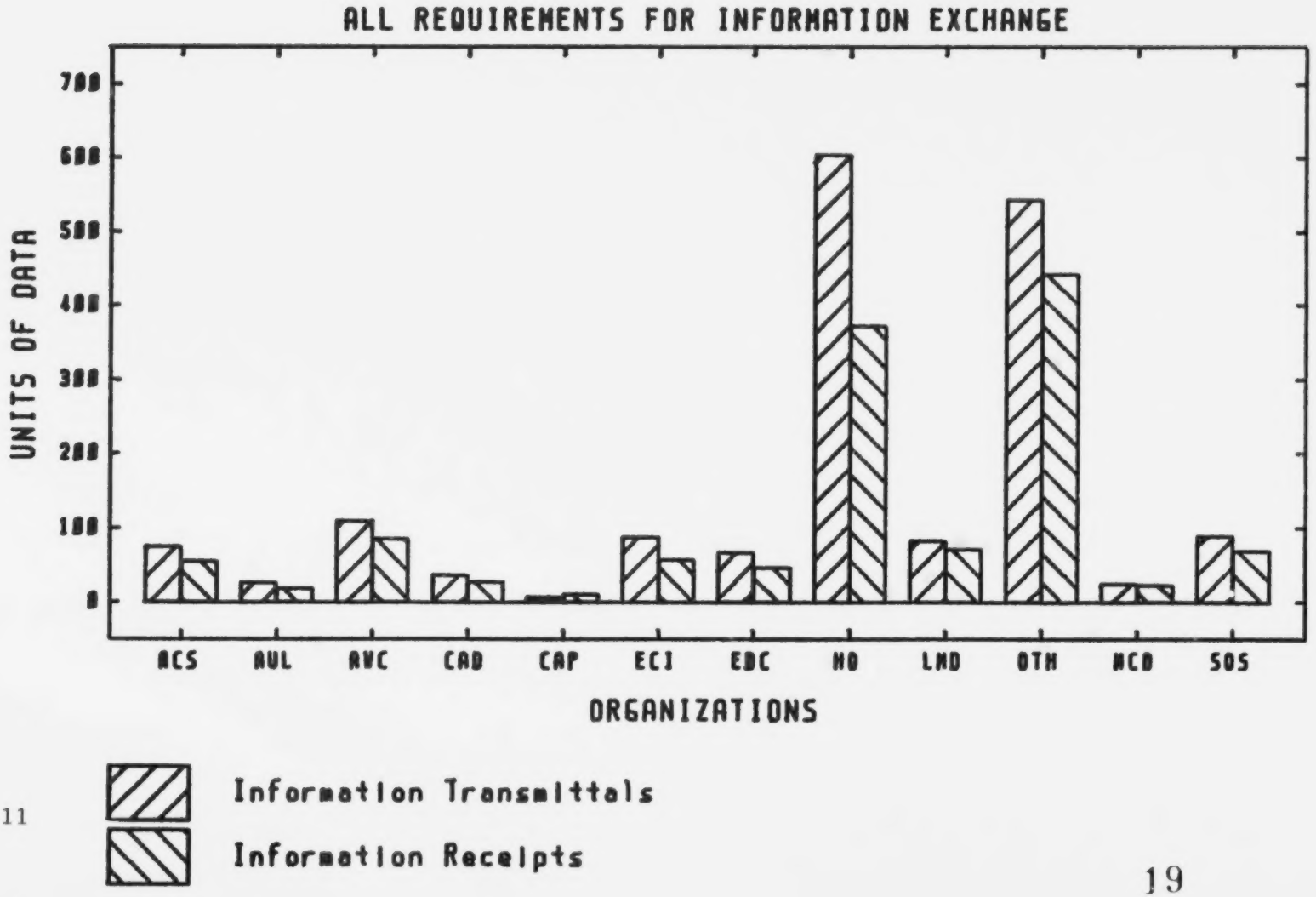
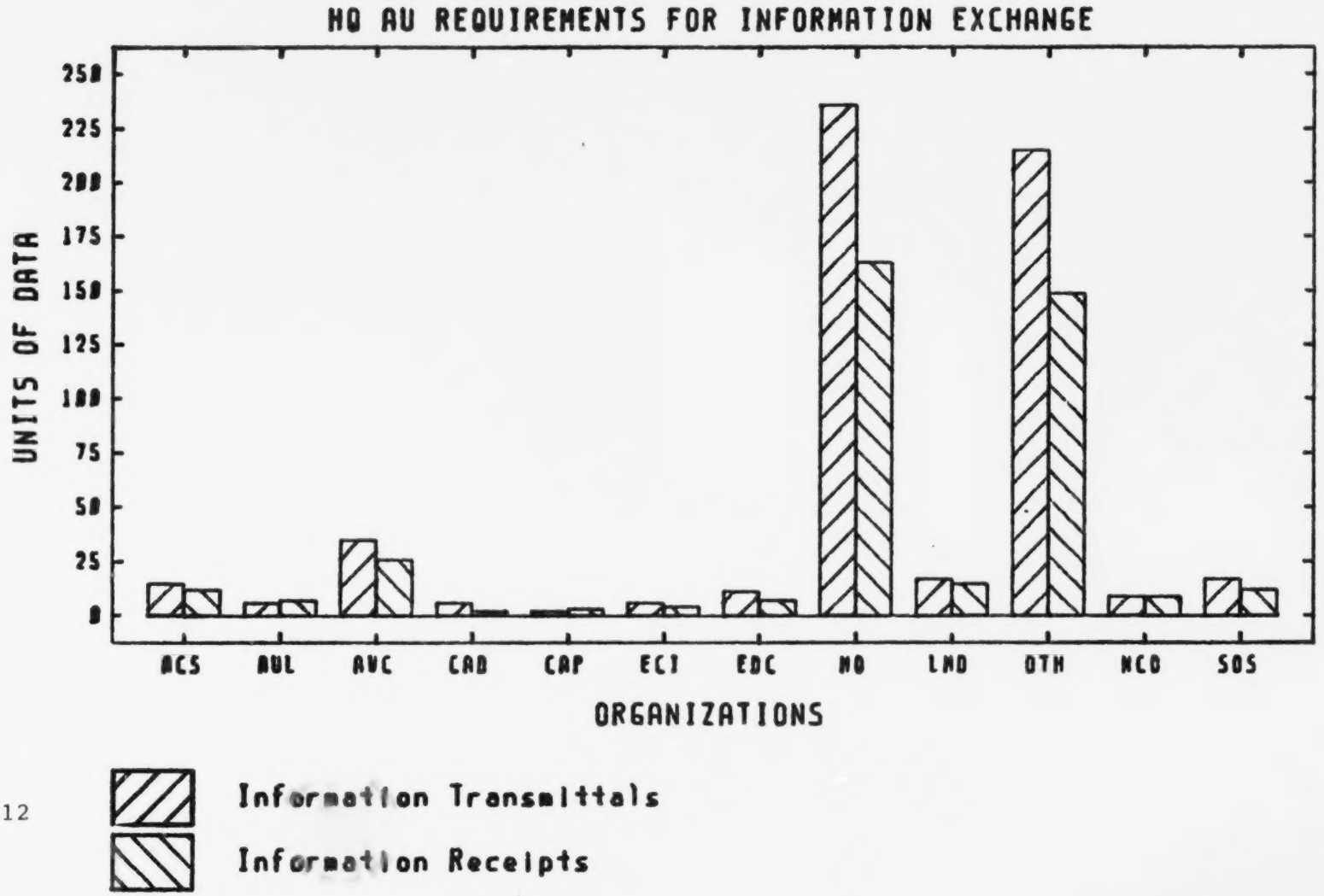

ALL REQUIREMENTS FOR INFORMATION EXCHANGE
UNITS OF DATA
700
600
500
400
300
200
100
0
ACS
AUL
AVC
CAD
CAP
ECI
EBC
HQ
LMD
OTH
MCD
SOS
ORGANIZATIONS
Information Transmittals
Information Receipts

FIGURE 6B


HQ AU REQUIREMENTS FOR INFORMATION EXCHANGE
UNITS OF DATA
250
225
200
175
150
125
100
75
50
25
0
ACS
AUL
AVC
CAD
CAP
ECI
EDC
HQ
LMD
OTH
NCD
SOS
ORGANIZATIONS
Information Transmittals
Information Receipts

VI. SPECIFIC EQUIPMENT AND SOFTWARE REQUIREMENTS

People still feel dependent on printed materials; 76.4 percent (or 914) said they needed a printer in their office. Of those needing a printer, 68.8 percent needed letter quality printers, 28.7 percent needed a dot matrix printer, and 2.5 percent said some other type printer was required (Items 37 and 38).

Table 5 shows the mean of the estimated frequency with which the various types of technologies would be used (where 1=never; 2=seldom; 3=sometimes; 4=frequently; and 5=constantly).

TABLE 5

MEAN ESTIMATED FREQUENCY OF TECHNOLOGY USE

Item No.	Technology Available	Freq. of Use
51.	Full-text files, regs, directories, etc.	2.89
50.	Graphic production capability	2.60
57.	Electronic Mail	2.60
63.	Automated calendars	2.56
54.	Computer-assisted instruction	2.56
55.	Network links to AU organizations for data/ correspondence transfer	2.33
53.	Electronically published professional journals	2.21
56.	Network likes outside AU (Air Staff, etc.)	2.19
47.	AUL Card Catalog	2.19
49.	Videotapes from AUTV or Base AV Library	2.13
52.	Commercial Databases (NY Times, The Source, ERIC, etc.)	2.01
58.	Recorded PME lectures for makeup & review	1.99
48.	AU base statistical info (e.g., "Facts & Figures", etc.)	1.97
59.	Videoconferencing	1.77
60.	Secure videoconferencing	1.35
61.	Teleconferencing	1.71
62.	Secure teleconferencing	1.37

Respondents were not able to determine whether it will be necessary to create unique software for automating their tasks. At least 43 percent didn't know whether they could use commercially available material. Only 17 percent said "yes" unique software would be required (Item 65).

In describing Local Area Network (LAN) requirements (Item 66), the greatest need was for data-only transmission (47 percent), followed by the need to transmit data, audio, and plus video (31 percent); and the need for data plus audio transmissions (17 percent).

Availability of Computer Equipment (Items 67-83)

At the time of this survey, 49 percent of the respondents said there were no microcomputers used in their immediate office area (division, directorate, etc.), approximately 24 percent had one microcomputer in their area while some areas had 2-3 (18 percent), and a few had 4 or more (9 percent) (Item 72). "Ready access" to micros was available for 56 percent of the respondents (Item 75.)

At that time, 52 percent of the people said more than 5 people shared each microcomputer. Only 6 percent of them were used by a single individual (Item 73). About 27 percent of those micros were "interconnected" in some way to other micros or computers. Use of each computer was over 2 hours per day (highest category available) for 63 percent of the computers (Item 76).

Peripheral accessories available were, at the time of this survey, rather limited (Table 6).

TABLE 6

AVAILABILITY OF PERIPHERAL EQUIPMENT

	% Having Available
Graph plotter	21
Color monitor	12
Communication modem	32
Light pen, mouse, or graphics tablet	6
Dot matrix printer	50
Letter-quality printer	52

Allowable Downtime and Information Growth (Items 83-86)

In an effort to foresee future problems related to completely automated offices, the survey included questions on the maximum tolerable downtime in such a system, projections on information growth, how much growth could be satisfied by technology, and the length of time a system would be satisfactory. Specific responses on these items are available in Appendix IV. The mean tolerable downtime was estimated at somewhere just under one day per week. The

mean anticipated information growth was projected at being somewhere around 15 percent over the next 5 years. Approximately 35 percent of that growth could be satisfied using automated technologies. Thus with some extrapolation, we could say that 35 percent of 15 percent or 5.25 percent of the anticipated growth in information flow over the next five years could be satisfied using technology. If an adequate system were installed "today," responses indicated it would be satisfactory for approximately three years.

Copyrighted Materials (Items 87-88)

Only 25 percent of those responding thought they would ever need to distribute copyrighted materials on local networks or make copies of copyrighted graphics via automated office systems, and only 30 percent of those indicating they would need to use copyrighted materials said they would know what they should do to use them.

Protection of Transmissions (Item 89)

About 38 percent of those responding to Item 89 (or 414 people) said they would need to protect documents so that others on-line could not view them or obtain printouts of the documents.

SUMMARY AND RECOMMENDATION

SUMMARY

The Technological Needs Survey for Air University provided the following information about the 1211 AU personnel who responded.

Opinions

65% already have experience in using microcomputers.
70% could use a commercial software package now.
70% view learning to use computers as part of their job.
61% say time could be saved by automating their offices.
3% did not want to learn to use microcomputers.

Order of Magnitude of Paperwork at AU

The paperwork load at Air University is a considerable portion of the work accomplished. This is not surprising due to the nature of the primary mission of Air University. The figures below illustrate this point.

	For 58% of the population population	EXTRAPOLATED to 100% permanent party personnel
Number Pages Per Day		
Worked On	24,000	41,379
Produced (new)	7,160	12,345
Reviewed	10,419	17,964
Transmitted Between Offices	3,837	6,616
Databases		
Separate Databases Maintained	2,320	4,000
Conservative Est. of No. Pgs. (60% updated daily or weekly: 86% referred to daily or weekly)	12,780	22,034

Information Retrieval

A total of 4,339 hours per day are spent searching files, filing, scheduling appointments, taking phone messages, editing and changing the format of existing information. Extrapolation of this figure to represent the total population gives us 7,481 hours per day!

Potential Savings:

If each of the 24,000 pages "worked on per day" are worked on for only 3 minutes each, a total of 150 man-days per day are used. If automation could save only 10% of the 4339 hours spent in information retrieval, this automation alone would result in a time savings of 54 man-days per day! When individuals were asked how much time could be saved by complete office automation, the total of their estimates indicate that 64 man-years per year could be saved.

Extrapolation of the above figures to represent the total population gives projected savings of 259 man-days per day spent in "working on" papers and 93 man-days per day which could be saved in information retrieval tasks alone with a 10% savings. T tal office automation could possibly save as much as 110 man-years.

Respondents estimated that there would be a 15% information growth over the next five years, and that 35% of that growth could be satisfied by automation.

RECOMMENDATION

Perceptions of time spent in different tasks and of potential savings are loose estimates at best and depend greatly upon the sophistication of the estimator. However, we are relatively safe in the knowledge that most offices experience steady upward growth in information. We also know that manpower increases are not likely in the foreseeable future. Consequently, the best way to satisfy our expanding requirements is via automation.

APPENDIX I
FUTURE TECHNOLOGIES: INFORMATION NEEDS SURVEY

FUTURE TECHNOLOGIES: INFORMATION NEEDS SURVEY

Introduction

We want to determine the future information needs for education and training within Air University. PART I of this survey provides definitions and examples of information technologies which may be of use to you. Individuals who are thoroughly familiar with current information technologies may skip PART I. **EVERYONE SHOULD RESPOND TO PART II.** It seeks information about your familiarity with automated information technologies, what you do, and how you conduct your primary mission(s). We will use this information to propose aids for improving productivity and effectiveness.

Privacy Act Statement

AUTHORITY: 10 U.S.C., 8012, Secretary of the Air Force: Powers and Duties. **PRINCIPAL PURPOSES AND ROUTINE USE:** See introduction above. **DISCLOSURE:** Participation in this survey is entirely voluntary. No adverse action of any kind may be taken against any individual who elects not to participate in this survey.

FOR HELP CALL AU/XPZ
5157/7423

PART I

Examples of Automated Information Technologies

Consider the information services described below. These descriptions are intended to provide ideas on the types of technologies which may be available for future Air University information needs. We hope you will use these examples to spark creative ideas for improving your work procedures and, if necessary, to assist in answering the following survey items.

Short-term Information Services

An electronic bulletin board is a computerized collection of information that is easily presented on a computer display device (sometimes called a monitor) or printed on an on-line printer. These services allow the use of an "electronic bulletin board" for broadcasting or displaying frequently updated information.

EXAMPLES:
- Base Bulletin
- Course notices
- Suspense requirements
- Commander's Call Notices

Registration information
Meeting times; changes in meeting times
Appointment calendars

Long-term Information Services (Database Management)

These services provide an electronic filing system for information which is less frequently updated and requires long-term storage. This information is as easily accessible as electronic bulletin board information. Included in this category would be databases. A **database** is a collection of facts or data elements organized into files or records of related subjects.

EXAMPLES:
Rosters
Handbooks
Schedules
Regulations
Course handouts
Course lesson plans
Organizational charts
Research information

Distribution Services (File Transfers)

A distribution or file transfer system would transfer a file from a central site to a microcomputer disk. The disk and the information it provides may then be used locally in a stand-alone mode. It also allows a creator to distribute files to selective users. Typically, this would involve educational materials, but could be used to give each organization or student an electronic copy of regulations or similar information. These types of file transfers are often done on **local area networks (LANs)** -- cable systems which electronically connect computers in a specified geographic area. These computers can then transfer information from one to another.

EXAMPLES:
Distribution of course materials
Collection of research information
Mandatory publications distribution
Distribution of database information
CMI (computer-managed instruction) testing, concept drills

Personal Correspondence

This capability allows distribution of electronic mail and appointment systems. It provides the ability to electronically send messages from one microcomputer to another or to several microcomputers and to file certain materials. It also has the ability to electronically direct appointments and request appointments against someone else's appointment book (with acknowledgement).

EXAMPLES:

Arranging meeting schedules for convenience of most participants
Requests for assistance in use of computer system (personal, and on-line)
Broad distribution of system functions information (power outages, computer systems download, etc.)

Written Communication

This concept provides the ability to create and edit written correspondence in a stand-alone mode on the microcomputer. It is typically found in various wordprocessing systems.

EXAMPLES:

Paper production (formatting, editing, spell-check, thesaurus use)
Bulk correspondence - capability of merging mailing lists with form letters, printing of labels
Office correspondence - providing templates (fill-in-the-blank SSS, OERs, letters, IOIs, etc.) for various routine formats

Audio/Video Capabilities

Automated audio and video capabilities allow broadcasts of audio and video programs to general or specific audiences with or without audience interaction. They may include such capabilities as interactive computer-aided instruction, and telephone access via a network.

EXAMPLES:

Teleconferencing
In-class videotape support
Dial-up instructional programs
Administrative information such as safety briefings
Recording and replay capability of key lectures, etc.
Career-broadening seminars, e.g., PROJECT WARRIOR videotapes
Telephone access to instructional material from offices as well as VOQs

Dataprocessing/Interaction With Other Computers for Your Immediate Office Area

This concept allows us to perform information processing, by accessing computers from your workstation (either at home or office). For example, from your microcomputer, you may need to use capabilities normally found on mainframes (large-capacity computers), or on specialty peripheral devices (plotters, printers, tape-drives, large databases, etc.), or access special-purpose software such as the Statistical Package for Social Sciences (SPSS) or other languages which your terminal cannot handle.

Summary

The above descriptions represent some of the most obvious uses of automated information transfer and manipulation. They are meant only to provide examples and are by no means all-inclusive of the things which can be done in our work areas. The ultimate limits and efficiencies can be obtained only by your creative application of the newly available technologies to your work environment.

Continue to PART II

FOR HELP CALL
AU/XPZ
5157/7423

PART II

PLEASE PLACE ALL ANSWERS ON THE STANDARD ANSWER SHEET PROVIDED.

If in doubt about whether to answer an item on the basis of your work area or as an individual, answer as an individual.

USE THE "IDENTIFICATION AREA" OF YOUR ANSWER SHEET TO PROVIDE YOUR BUILDING, ROOM, AND FLOOR NUMBERS:

- **USE THE TEST NO. BLOCK TO PROVIDE THE FLOOR NUMBER OF YOUR OFFICE**
- **USE THE SCHOOL CODE BLOCKS TO PROVIDE THE ROOM NUMBER OF YOUR OFFICE**
- **USE THE LAST FOUR COLUMNS OF THE SOCIAL SECURITY NUMBER BLOCK TO PROVIDE YOUR BUILDING NO.**

1. Use the list below to indicate your ORGANIZATION. To the left of each response is a two-letter code. The first letter will be the response choice for item 1 on your answer sheet; the second letter will be the choice for item 2. For example, a person assigned to SOS would mark "A" for item 1 and "C" for item 2.

ITEM 1	ITEM 2	ORGANIZATIONS
A	A	Air War College
A	B	Air Command and Staff College
A	C	Squadron Officer School
A	D	Leadership and Management Development Center
A	E	AF Senior Noncommissioned Officer Academy
B	A	Educational Development Center
B	B	Air University Headquarters
B	C	Air University Library
B	D	Extension Course Institute
B	E	Center for Aerospace Doctrine, Research, and Education
C	A	Civil Air Patrol-USAF
C	B	Other

3-4 Using the same procedure as above, indicate your RANK.

ITEM 3	ITEM 4	RANK
A	A	01-03
A	B	04-05
A	C	06 or above
A	D	E1-E3
A	E	E4-E6
B	A	E7 or above
B	B	GS 7 or below
B	C	GS 8-12
B	D	GS (GM)13-15
B	E	WG 1-3
C	A	WG 4-5
C	B	WG 7 or above

5. Do you have a microcomputer at home?

A. Yes B. No (go to item 7)

6. If yes, which type?

A. Zenith
B. IBM
C. Apple
D. Atari or Commodore
E. Other (please specify)_____

7. Estimate your present level of familiarity with recent technological advances in information transfer and processing. (This does not imply that you must be a computer programmer, etc., but rather that you know what current technologies can do for you.)

A. Not familiar at all
B. Slightly familiar
C. Moderately familiar
D. Familiar
E. Very familiar

8. What is your level of expertise with microcomputers?

A. Absolutely none
B. Beginner
C. Fairly proficient
D. Proficient
E. Expert

9. In my immediate work area, my boss views learning to use computers as

A. A valid part of my job
B. Ok, if it doesn't interfere with my work
C. A waste of time
D. None of the above, or don't have impression of his/her feelings

10. I personally view learning to use computers in my work as

A. A valid part of my job
B. Ok, if it doesn't interfere with my work
C. A waste of time
D. None of the above, or no opinion

11. What is your primary job?

A. Manager/executive/director
B. Curriculum development/planning/evaluation
C. Instructor
D. Administrative or services
E. Staff or advisory

12. Do you supervise other individuals? If yes, how many?

A. No
B. Yes, 1-3 individuals
C. Yes, 4-6 individuals
D. Yes, 7-9 individuals
E. Yes, 10 or more individuals

13. In your current job, do you now work with any technology or technology products more advanced than an electric/electronic typewriter?

A. Yes B. No (go to item 18)

14-17. If you answered "yes" above, respond to items 14-17 below.

14. Do you use TV or VCR?

A. Yes B. No

15. Do you use microcomputers?

A. Yes B. No

16. Do you use computer-generated graphics or slides?

A. Yes B. No

17. Do you use mainframe computer products (printouts)

A. Yes B. No

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18. The type documents I produce most often in my job are:

A. Reports and forms
B. Letters, general correspondence
C. Textbook materials
D. Positions papers and staff summary sheets with supporting documents
E. Other (specify)_____

19. The average number of pages of written materials I work on per day would be: (Include the total number you would need to view on a screen for reference, to change, or to produce in original form.)

A. Less than 10
B. 10-20
C. 20-30
D. More than 30
E. Not applicable, or do not know

20. The average number of pages for each separate document I produce is

A. 1
B. 2-4
C. 5-10
D. 10 or more
E. Not applicable, or do not know

21. The average number of document pages (total number including typed pages and completed forms) I produce per work day is

A. Less than 5
B. 5-10
C. 10-15
D. More than 15
E. Not applicable, or do not know

22. The average number of pages I review (produced elsewhere) per day is

A. Less than 5
B. 5-10
C. 10-15
D. More than 15
E. Not applicable, or do not know

23. Estimate the number of pages you file per day in your office.

A. Not applicable, or do not know
B. Fewer than 10
C. 10-25
D. 26-50
E. More than 50

24. If you had automated appointment book capabililty, how small would the units of time have to be to schedule your appointments (or those of any individual for whom you keep appointments)?

A. Less than 15 minutes
B. 15 minutes
C. 30 minutes
D. 60 minutes
E. Other (specify) _____

25. I would normally prefer to schedule appointments for myself (or for anyone for whom you usually schedule appointments)

A. No more than one day in advance
B. Two-three days in advance
C. One week in advance
D. Two weeks in advance
E. More than two weeks in advance

26. Would restricted access be necessary for an automated appointment book for your use?

A. Yes B. No

27. Would it be necessary for the recipient of the appointment to acknowledge receipt or approve of the appointment made by you on an automated appointment system?

A. Yes B. No

28. How many separate databases (or files of information which could be developed into a "database") do you maintain either automatically or manually? (See definition of a database in PART I if necessary.)

A. None (go to item 34)
B. 1
C. 2
D. 3
E. 4 or more

29. Estimate the average number of pages required for each database.

A. Fewer than 10
B. 10-25 pages
C. 26-50 pages
D. More than 50 pages
E. Do not know

30. The frequency with which my database(s) should be updated is

A. Daily
B. Weekly
C. Monthly
D. Quarterly
E. Seasonally or annually

31. How often would you or others need to refer to or use your database(s)?

A. Daily
B. Weekly
C. Monthly
D. Quarterly
E. Seasonally or annually

32. Do you need to keep a log of how much your database is used or who used it?

A. No
B. Yes, amount of time it was used
C. Yes, who used it
D. Yes, number of times it was used
E. Yes, when it was used

33. Most people using my database(s) would want to

A. View it and copy a portion of it
B. Copy the entire database
C. Transmit a copy to someone else
D. Simply view the contents
E. Make inputs to my database

34. Could you take a commercial software package and make it run using only the instruction manuals provided?

A. No
B. Maybe
C. Most likely
D. Yes
E. Do not know, I have never tried

35. In order to get help to run a standard (commercial) microcomputer program, how far would you have to go:

A. I do not know.
B. In my immediate work area.
C. Within a convenient distance in my building.
D. In my building, but getting help would probably not be convenient.
E. Outside my building.

36. How do you feel about being willing to put in the time to learn the basic operation of automated equipment?

A. I do not want to have anything to do with it.
B. I am not looking forward to it, but realize that I need to learn.
C. I am a little awed by the technology, but look forward to learning.
D. I am already learning or am really looking forward to learning more.
E. I am already very familiar with such equipment.

37. Would it be necessary to have a printer in your office for a microcomputer to be useful? (That is, are hardcopies required, or could you use the information from a monitor--computer "TV" screen?)

A. Yes B. No (go to item 39)

38. If a printer is necessary for your office, which type would meet minimum requirements.

A. Dot Matrix (This is "dot matrix" print.)
B. Letter-quality (This is "letter-quality" print.)
C. Other (Specify) _____

39. How many pages of forms, reports, Items of Interest (IOIs), Staff Summary Sheets, etc. do you individually use in your office per day which are subsequently sent to another office on base?

A. None
B. 1-3
C. 4-5
D. 6-9
E. 10 or more

40. Automating the flow of information used in my work would:

A. Probably take more time than it would save.
B. Save me from a few minutes up to an hour a day.
C. Save me up to one to three hours per day
D. Save me four or more hours per day.
E. Do not know or not applicable..

41-46. USE THE FOLLOWING ANSWERS FOR ITEMS 41-46 TO INDICATE HOW MUCH TIME PER DAY YOU SPEND ON EACH TASK.

A. NONE B. UP TO 30 MINS C. 30 MINS-1 HR D. 1-4 HRS E. MORE THAN 4 HRS

41. Searching files for retrieval of information

42. Putting material in files

43. Scheduling appointments

44. Taking and delivering telephone messages

45. Editing (for readability, grammar, typos)

46. Changing information from one format to another. (For example: recompiling data or words to complete a report, or provide backup for a paper)

47-63. Use the following answers to indicate the frequency with which you would anticipate using the information sources listed in items 47-63 if they were available electronically in your office.

A. NEVER B. SELDOM C. SOMETIMES D. FREQUENTLY E. CONSTANTLY

47. Air University Library Card Catalog

48. Air University base statistical information (e.g., "AU Facts and Figures")

49. Videotapes from AUTV or base AV library

50. Graphic production capability (for briefings, lectures, meetings, reports, etc.

51. Special full-text files such as regulations, directories, etc. (with this capability, only one place updates information, your on-line copy is automatically maintained)

52. Commercial databases (e.g., New York Times Database, The SOURCE, ERIC)

53. Electronically published professional journals

54. Computer-assisted Instruction (for drill and practice, perhaps on how to use a microcomputer or a host of other topics)

55. Network links to other on-campus AU organizations for data or correspondence transfer (such as sharing speakers, research data, copyright releases, instructional materials, or file transfers)

56. Network links to outside Maxwell (e.g., Air Staff, AFIT) to forward reports, check on funding, students, or personnel information with Air Staff, AFIT, MPC or other areas.

57. Electronic mail (to avoid the "leave a message that I called to return the call she made to me this morning.")

58. Recorded PME lectures for makeup or review (by students or faculty, or for new faculty training)

59. Videoconferencing (to save TDY funds for brief meetings)

60. Secure videoconferencing (as above, but used when secure communication links are required)

61. Teleconferencing (to save TDY funds, but used where audio only is sufficient)

62. Secure teleconferencing (as above, but used when secure communication links are required)

63. Automated calendars

64. For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

65. To automate your tasks, do you think it will be necessary to create unique software as opposed to being able to use commercially available software packages?

A. Yes B. No C. Do not know

66. What type of information would you need to use in a local area network (LAN)? (See definition of LAN in PART I if necessary.)

A. Data only
B. Audio only
C. Video (one-way or interactive video)
D. All of the above
E. A and B above

67-71 Consider automated technologies listed in items 67-71. Which response below best reflects your professional use of each?

A. Already use.
B. Already use, but need expansion or improvement of the system available.
C. Not available now, but is needed for the future.
D. Do not need.
E. Not applicable, or do not know.

67. Word processing

68. Database management

69. Information retrieval (including access to large central computers)

70. Mathematical computation

71. Computer-assisted instruction

72. How many microcomputers are now used in your immediate office area (division, directorate, etc.)?

A. None (go to item 83)
B. 1
C. 2-3
D. 4-5
E. More than 5

73. How many people share the use of those microcomputers?

A. 1
B. 2-3
C. 4-5
D. More than 5

74. Are any of those microcomputers interconnected?

A. Yes B. No

75. Do you have ready access to a microcomputer for your use?

A. Yes B. No

76. On the average, how much are each of the currently installed microcomputers in your office area used each day?

A. less than 30 minutes
B. 30-40 minutes
C. 1-2 hours
D. over 2 hours

77-83. Indicate whether you have each of the following accessories attached or available to the microcomputers in your office area? (Mark A for YES and B for NO)

77. Graph plotter

78. Color monitor

79. Communication modem

80. Light pen, "mouse", or graphics tablet

81. Dot matrix printer

82. Letter quality printer

83. What would be the maximum tolerable downtime per week if your office was completely automated?

A. Up to 2 hours
B. 3-4 hours
C. 5-7 hours
D. 1 to 1 1/2 days
E. Do not know

84. How much growth, if any, do you anticipate in your information production or information use over the next 5 years?

A. None (go to item 87)
B. Up to 10%
C. 10-20%
D. 20-40%
E. 40% or more

85. How much of the anticipated growth could be satisfied by using automated information technologies?

A. None
B. 10%
C. 20%
D. 40%
E. More than 40%

86. Consider your anticipated growth in workload. If an automated system sufficient for your current workload were installed today, how long do you estimate it would be sufficient? (Consider, for example, whether your office is expecting to add new responsibilities in the future. Will your information base continue to grow, or will your information be purged periodically?)

A. 1 year
B. 2 years
C. 3 years
D. 4-5 years
E. More than 5 years

87. Would you ever need to distribute copyrighted materials on local networks or make copies of copyrighted graphics via automated office systems?

A. Yes B. No (go to item 89) C. Do not know (go to item 89)

88. If you answered "yes" above concerning use of copyrighted materials, do you know what you should do?

A. Yes, I do B. No, I do not C. I think so

89. Would any of the materials (documents) you would send or receive via an automated information system need to be protected so that others on-line could not view them or get a print out of them?

A. Yes B. No C. Do not know

90. Consider the future as well as the present. What offices in what buildings **within Air University** do you most frequently send written information to, and receive information from? (Please provide complete office symbol. For example, AU/XPZ in 800)

MOST OFTEN SEND TO			MOST OFTEN RECEIVE FROM		
OFF SYMBOL		BLDG NO	OFF SYMBOL		BLDG NO
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____

91. Where **outside Air University** do you most frequently send written information to or receive information from? (On Maxwell and Gunter please provide building number. For other bases, general descriptions may be used in place of building numbers. For example, AF/MPK in Pentagon, or ATC/ED in Randolph AFB.)

MOST OFTEN SEND TO			MOST OFTEN RECEIVE FROM		
OFF SYMBOL		BLDG NO/ LOCATION	OFF SYMBOL		BLDG NO/ LOCATION
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____

92. If you were unable to describe your business interactions on the two previous items, do you need connections to all levels of all AU organizations on Maxwell and Gunter? That is, do you need to be able to communicate with anybody at any level of an AU organization?

A. Yes, frequently B. Yes, but not frequently C. No

93. Assume a real Star Wars-type environment. If everything is possible and affordable, what are the most exotic things you can think of for your office that would improve work environment?

RETURN YOUR ANSWER SHEET ALONG WITH THIS SURVEY TO

AU/XPZ (DR REED)
BUILDING 800
MAXWELL AFB, AL 36112-5001

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FOR HELP
5157 or 7423

APPENDIX II

Distribution of Survey

Copies of the Future Technologies: Information Needs Survey were distributed on to the following organizations:

Organization	No. of Copies
1973 Comm SQ	170
HOSP/SGS	523
AWC/EDV	145
ACSC/EDV	167
SOS/DA	164
LMDC/DA	168
SNCOA/DA	66
EDC/DA	67
AUL/LDA	67
EDI/DA	122
CADRE/DA	130
HQ CAPUSAF/DAA	103
AU/CC	14
AU/CSP	4
AU/HO	2
AU/CSAW	8
AU/AC	25
AU/AD (including 3811th Squadron)	114
AUR	15
AU/DP	35
AU/XP	45
AU/IG	14
AU/IN	9
AU/JA	7
AU/PA	13
AU/RV	2
TOTAL	2199

APPENDIX III

OPPORTUNITY COSTS

BY

ORGANIZATION

TOTAL FOR ALL AIR UNIVERSITY UNITS

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	2099	OFFICER PAY/HOUR	26.27
RESPONSE N =	1207	ENLISTED PAY/HOUR	11.61
RESPONSE % =	58	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** C O M P U T A T I O N S **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	156	0	167	0	181	0	0
B.	1	83	83	39	39	39	39	161
C.	2.5	149	372.5	73	182.5	58	145	700
D.	5.5	92	506	39	214.5	30	165	885.5
E.	8	49	392	26	208	26	208	808
MANHOURS			1353.5		644		557	2554.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 35556.45		7476.84		7363.54	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 1706709		$ 358888		$ 353450	2,419,048

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS $12,095,238

MANHOURS PER WEEK .	1353.5	644	557	
MANYEARS PER YEAR .	33.84	16.10	13.93	63.86

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HEADQUARTERS AIR UNIVERSITY

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	185	OFFICER PAY/HOUR	26.27
RESPONSE N =	195	ENLISTED PAY/HOUR	11.61
RESPONSE % =	105	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

	OFFICER		ENLISTED		CIVILIAN		GRAND
RESP. HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A. 0	13	0	32	0	32	0	0
B. 1	6	6	10	10	10	10	26
C. 2.5	20	50	11	27.5	13	32.5	110
D. 5.5	14	77	7	38.5	10	55	170.5
E. 8	7	56	7	56	3	24	136
MANHOURS		189		132		121.5	442.5
X PAY PER HOUR .		$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .		$ 4965.03		1532.52		1606.23	
ANNUAL COST TOTALS =							
WEEKLY X WKS/YR		$ 238321		$ 73561		$ 77099	388981

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 1,944,907

MANHOURS PER WEEK .	189	132	121.5	
MANYEARS	4.73	3.30	3.04	11.06

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CENTER FOR AEROSPACE DOCTRINE RESEARCH AND EDUCATION

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	109	OFFICER PAY/HOUR	26.27
RESPONSE N =	44	ENLISTED PAY/HOUR	11.61
RESPONSE % =	40	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	2	0	0	0	14	0	0
B.	1	2	2	0	0	2	2	4
C.	2.5	3	7.5	0	0	4	10	17.5
D.	5.5	6	33	0	0	3	16.5	49.5
E.	8	4	32	0	0	4	32	64
MANHOURS			74.5		0		60.5	135
X PAY PER HOUR .		$	26.27	$	11.61	$	13.22	
COST PER WEEK . .		$	1957.115		0		799.81	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR		$	93942	$	0	$	38391	132332
MANHOURS PER WEEK .			74.5		0		60.5	
MANYEARS			1.86		.00		1.51	3.38

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 661,662

AIR WAR COLLEGE

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	135	OFFICER PAY/HOUR	26.27
RESPONSE N =	94	ENLISTED PAY/HOUR	11.61
RESPONSE % =	70	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** C O M P U T A T I O N S **********

		OFFICER		ENLISTED		CIVILIAN	GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	18	0	8	0	4	0	0
B.	1	10	10	0	0	3	3	13
C.	2.5	18	45	6	15	4	10	70
D.	5.5	11	60.5	0	0	0	0	60.5
E.	8	7	56	2	16	3	24	96
MANHOURS			171.5		31		37	239.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 4505.305		359.91		489.14	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 216255		$ 17276		$ 23479	257009

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 1,285,045

MANHOURS PER WEEK .	171.5	31	37	
MANYEARS	4.29	.78	.93	5.99

AIR COMMAND AND STAFF COLLEGE

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	194	OFFICER PAY/HOUR	26.27
RESPONSE N =	130	ENLISTED PAY/HOUR	11.61
RESPONSE % =	67	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	24	0	4	0	9	0	0
B.	1	19	19	0	0	4	4	23
C.	2.5	31	77.5	0	0	4	10	87.5
D.	5.5	19	104.5	2	11	1	5.5	121
E.	8	11	88	1	8	1	8	104
MANHOURS			289		19		27.5	335.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 7592.03		220.59		363.55	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 364417		$ 10588		$ 17450	392456

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 1,962,281

MANHOURS PER WEEK .	289	19	27.5	
MANYEARS	7.23	.48	.69	8.39

SQUADRON OFFICER SCHOOL

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	159	OFFICER PAY/HOUR	26.27
RESPONSE N =	94	ENLISTED PAY/HOUR	11.61
RESPONSE % =	59	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** C O M P U T A T I O N S **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	23	0	2	0	6	0	0
B.	1	15	15	1	1	1	1	17
C.	2.5	28	70	1	2.5	2	5	77.5
D.	5.5	10	55	1	5.5	0	0	60.5
E.	8	3	24	0	0	1	8	32
MANHOURS			164		9		14	187
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 4308.28		104.49		185.08	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 206797		$ 5016		$ 8884	220697
MANHOURS PER WEEK .			164		9		14	
MANYEARS			4.10		.23		.35	4.68

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 1,103,484

LEADERSHIP AND MANAGEMENT DEVELOPMENT CENTER

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	165	OFFICER PAY/HOUR	26.27
RESPONSE N =	63	ENLISTED PAY/HOUR	11.61
RESPONSE % =	38	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	10	0	5	0	3	0	0
B.	1	8	8	1	1	1	1	10
C.	2.5	9	22.5	3	7.5	3	7.5	37.5
D.	5.5	8	44	7	38.5	0	0	82.5
E.	8	3	24	2	16	0	0	40
MANHOURS			98.5		63		8.5	170
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 2587.595		731.43		112.37	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 124205		$ 35109		$ 5394	164707

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 823,535

MANHOURS PER WEEK .	98.5	63	8.5	
MANYEARS	2.46	1.58	.21	4.25

EDUCATIONAL DEVELOPMENT CENTER

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	69	OFFICER PAY/HOUR	26.27
RESPONSE N =	67	ENLISTED PAY/HOUR	11.61
RESPONSE % =	97	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

	OFFICER		ENLISTED		CIVILIAN		GRAND
RESP. HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A. 0	7	0	4	0	9	0	0
B. 1	6	6	0	0	3	3	9
C. 2.5	9	22.5	3	7.5	4	10	40
D. 5.5	7	38.5	3	16.5	3	16.5	71.5
E. 8	4	32	1	8	4	32	72
MANHOURS		99		32		61.5	192.5
X PAY PER HOUR .		$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .		$ 2600.73		371.52		813.03	
ANNUAL COST TOTALS =							
WEEKLY X WKS/YR		$ 124835		$ 17833		$ 39025	181693

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 908,467

MANHOURS PER WEEK .	99	32	61.5	
MANYEARS	2.48	.80	1.54	4.81

AF SENIOR NCO ACADEMY

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	57	OFFICER PAY/HOUR	26.27
RESPONSE N =	45	ENLISTED PAY/HOUR	11.61
RESPONSE % =	79	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	0	0	10	0	3	0	0
B.	1	0	0	5	5	1	1	6
C.	2.5	0	0	14	35	2	5	40
D.	5.5	0	0	5	27.5	1	5.5	33
E.	8	0	0	4	32	0	0	32
MANHOURS			0		99.5		11.5	111
X PAY PER HOUR .		$	26.27	$	11.61	$	13.22	
COST PER WEEK . .		$	0		1155.195		152.03	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR		$	0	$	55449	$	7297	62747

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 313,734

MANHOURS PER WEEK .	0	99.5	11.5	
MANYEARS	.00	2.49	.29	2.78

49

EXTENSION COURSE INSTITUTE

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	127	OFFICER PAY/HOUR	26.27
RESPONSE N =	73	ENLISTED PAY/HOUR	11.61
RESPONSE % =	57	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	6	0	1	0	38	0	0
B.	1	2	2	1	1	5	5	8
C.	2.5	3	7.5	1	2.5	4	10	20
D.	5.5	2	11	0	0	7	38.5	49.5
E.	8	0	0	0	0	3	24	24
MANHOURS			20.5		3.5		77.5	101.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 538.535		40.635		1024.55	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 25850		$ 1950		$ 49178	76979

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 384,893

MANHOURS PER WEEK .	20.5	3.5	77.5	
MANYEARS	.51	.09	1.94	2.54

AIR UNIVERSITY LIBRARY

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	72	OFFICER PAY/HOUR	26.27
RESPONSE N =	37	ENLISTED PAY/HOUR	11.61
RESPONSE % =	51	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** C O M P U T A T I O N S **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	1	0	0	0	20	0	0
B.	1	1	1	0	0	2	2	3
C.	2.5	0	0	1	2.5	4	10	12.5
D.	5.5	1	5.5	1	5.5	2	11	22
E.	8	0	0	0	0	4	32	32
MANHOURS			6.5		8		55	69.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 170.755		92.88		727.1	
ANNUAL COST TOTALS = WEEKLY X WKS/YR			$ 8196		$ 4458		$ 34901	47555

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 237,776

MANHOURS PER WEEK .	6.5	8	55	
MANYEARS	.16	.20	1.38	1.74

51

OTHER (3800 ABG, 1973 ISG, HOSPITAL, TENANTS)

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	900(EST)	OFFICER PAY/HOUR	26.27
RESPONSE N =	276	ENLISTED PAY/HOUR	11.61
RESPONSE % =	31	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** C O M P U T A T I O N S **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	40	0	84	0	23	0	0
B.	1	9	9	17	17	3	3	29
C.	2.5	24	60	27	67.5	9	22.5	150
D.	5.5	11	60.5	12	66	2	11	137.5
E.	8	8	64	6	48	1	8	120
MANHOURS			193.5		198.5		44.5	436.5
X PAY PER HOUR .			$ 26.27		$ 11.61		$ 13.22	
COST PER WEEK . .			$ 5083.245		2304.585		588.29	
ANNUAL COST TOTALS =								
WEEKLY X WKS/YR			$ 243996		$ 110620		$ 28238	382854

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 1,914,269

MANHOURS PER WEEK .	193.5	198.5	44.5	
MANYEARS	4.84	4.96	1.11	10.91

CIVIL AIR PATROL (USAF)

OPPORTUNITY COSTS

Question # 64: For your position alone, how much time could be saved if the above services were available?

A. None, or do not know
B. 1 hour/wk
C. 2-3 hours/wk
D. 4-7 hours/wk
E. 8 hours or more/wk

POPULATION N =	103	OFFICER PAY/HOUR	26.27
RESPONSE N =	65	ENLISTED PAY/HOUR	11.61
RESPONSE % =	63	CIVILIAN PAY/HOUR	13.22
		WORK WEEKS/YEAR =	48
		MANHOURS PER WEEK	40
		MANHOURS PER MONTH	160
		MANHOURS PER YEAR	1920

********** COMPUTATIONS **********

		OFFICER		ENLISTED		CIVILIAN		GRAND
RESP.	HOURS	N	HOURS	N	HOURS	N	HOURS	TOTAL
A.	0	10	0	11	0	12	0	0
B.	1	4	4	3	3	3	3	10
C.	2.5	4	10	5	12.5	5	12.5	35
D.	5.5	2	11	1	5.5	0	0	16.5
E.	8	1	8	3	24	1	8	40
MANHOURS			33		45		23.5	101.5
X PAY PER HOUR .		$	26.27	$	11.61	$	13.22	
COST PER WEEK . .		$	866.91		522.45		310.67	
ANNUAL COST TOTALS = WEEKLY X WKS/YR		$	41612	$	25078	$	14912	81601

FYDP SAVINGS (OPORTUNITY COST) = ANNUAL COST X 5 YEARS . . . . $ 408,007

MANHOURS PER WEEK .	33	45	23.5	
MANYEARS	.83	1.13	.59	2.54

APPENDIX IV

RESPONSES TO FUTURE TECHNOLOGIES:

INFORMATION NEEDS SURVEY

PART II

PLEASE PLACE ALL ANSWERS ON THE STANDARD ANSWER SHEET PROVIDED.

If in doubt about whether to answer an item on the basis of your work area or as an individual, answer as an individual.

USE THE "IDENTIFICATION AREA" OF YOUR ANSWER SHEET TO PROVIDE YOUR BUILDING, ROOM, AND FLOOR NUMBERS:

- **USE THE TEST NO. BLOCK TO PROVIDE THE FLOOR NUMBER OF YOUR OFFICE**
- **USE THE SCHOOL CODE BLOCKS TO PROVIDE THE ROOM NUMBER OF YOUR OFFICE**
- **USE THE LAST FOUR COLUMNS OF THE SOCIAL SECURITY NUMBER BLOCK TO PROVIDE YOUR BUILDING NO.**

1. Use the list below to indicate your ORGANIZATION. To the left of each response is a two-letter code. The first letter will be the response choice for item 1 on your answer sheet; the second letter will be the choice for item 2. For example, a person assigned to SOS would mark "A" for item 1 and "C" for item 2.

ITEM 1	ITEM 2	N	ORGANIZATIONS
A	A	94	Air War College
A	B	130	Air Command and Staff College
A	C	94	Squadron Officer School
A	D	63	Leadership and Management Development Center
A	E	45	AF Senior Noncommissioned Officer Academy
B	A	67	Educational Development Center
B	B	195	Air University Headquarters
B	C	38	Air University Library
B	D	74	Extension Course Institute
B	E	44	Center for Aerospace Doctrine, Research, and Education
C	A	65	Civil Air Patrol-USAF
C	B	277	Other
		25	(Unidentified)
		1211	

3-4 Using the same procedure as above, indicate your RANK.

ITEM 3	ITEM 4	N	RANK
A	A		01-03
A	B		04-05
A	C	officer 529	06 or above
A	D		E1-E3
A	E		E4-E6
B	A	Enlisted 344	E7 or above
B	B		GS 7 or below
B	C		GS 8-12
B	D	Civilian 334	GS (GM)13-15
B	E		WG 1-3
C	A		WG 4-5
C	B	Wage grade 4	WG 7 or above

N = 1211

5. Do you have a microcomputer at home?

28.4% A. Yes 71.6% B. No (go to item 7)

6. If yes, which type?

5.1% A. Zenith
7.0% B. IBM
19.5% C. Apple
38.2% D. Atari or Commodore
30.0% E. Other (please specify)_____

7. Estimate your present level of familiarity with recent technological advances in information transfer and processing. (This does not imply that you must be a computer programmer, etc., but rather that you know what current technologies can do for you.)

12.8% A. Not familiar at all
34.9% B. Slightly familiar
27.4% C. Moderately familiar
16.0% D. Familiar
8.9% E. Very familiar $\bar{X} = 2.734$

8. What is your level of expertise with microcomputers?

33.4% A. Absolutely none
43.6% B. Beginner
15.4% C. Fairly proficient
6.2% D. Proficient
1.3% E. Expert $\bar{X} = 1.985$

9. In my immediate work area, my boss views learning to use computers as

54.0% A. A valid part of my job
9.7% B. Ok, if it doesn't interfere with my work
1.5% C. A waste of time
34.7% D. None of the above, or don't have impression of his/her feelings

10. I personally view learning to use computers in my work as

69.8% A. A valid part of my job
12.6% B. Ok, if it doesn't interfere with my work
1.9% C. A waste of time
15.4% D. None of the above, or no opinion
.2% E.

11. What is your primary job?

22.5% A. Manager/executive/director
13.7% B. Curriculum development/planning/evaluation
13.7% C. Instructor
32.2% D. Administrative or services
17.9% E. Staff or advisory

12. Do you supervise other individuals? If yes, how many?

57.7% A. No
18.2% B. Yes, 1-3 individuals
7.1% C. Yes, 4-6 individuals
4.5% D. Yes, 7-9 individuals
12.6% E. Yes, 10 or more individuals

13. In your current job, do you now work with any technology or technology products more advanced than an electric/electronic typewriter?

58.7% A. Yes 40.9% B. No (go to item 18)

14-17. If you answered "yes" above, respond to items 14-17 below.

14. Do you use TV or VCR?

54.9% A. Yes 44.8% B. No

15. Do you use microcomputers?

60.0% A. Yes 40.0% B. No

16. Do you use computer-generated graphics or slides?

27.4% A. Yes 72.4% B. No

17. Do you use mainframe computer products (printouts)

78.9% A. Yes 21.2% B. No

18. The type documents I produce most often in my job are:

35.9% A. Reports and forms
30.2% B. Letters, general correspondence
11.8% C. Textbook materials
7.1% D. Positions papers and staff summary sheets with supporting documents
14.9% E. Other (specify)_____

19. The average number of pages of written materials I work on per day would be: (Include the total number you would need to view on a screen for reference, to change, or to produce in original form.)

34.1% A. Less than 10
22.6% B. 10-20
12.5% C. 20-30
19.0% D. More than 30
11.8% E. Not applicable, or do not know

20. The average number of pages for each separate document I produce is

19.0% A. 1
39.9% B. 2-4
10.2% C. 5-10
14.3% D. 10 or more
16.6% E. Not applicable, or do not know

21. The average number of document pages (total number including typed pages and completed forms) I produce per work day is

35.2% A. Less than 5
21.1% B. 5-10
10.7% C. 10-15
14.9% D. More than 15
18.1% E. Not applicable, or do not know

22. The average number of pages I review (produced elsewhere) per day is

19.1% A. Less than 5
20.0% B. 5-10
12.9% C. 10-15
34.4% D. More than 15
13.7% E. Not applicable, or do not know

23. Estimate the number of pages you file per day in your office.

32.1% A. Not applicable, or do not know
39.7% B. Fewer than 10
18.0% C. 10-25
4.3% D. 26-50
6.0% E. More than 50

24. If you had automated appointment book capabililty, how small would the units of time have to be to schedule your appointments (or those of any individual for whom you keep appointments)?

23.6% A. Less than 15 minutes
28.1% B. 15 minutes
27.7% C. 30 minutes
12.1% D. 60 minutes
8.5% E. Other (specify) _____

25. I would normally prefer to schedule appointments for myself (or for anyone for whom you usually schedule appointments)

10.7% A. No more than one day in advance
32.7% B. Two-three days in advance
33.0% C. One week in advance
10.9% D. Two weeks in advance
12.7% E. More than two weeks in advance

26. Would restricted access be necessary for an automated appointment book for your use?

17.8% A. Yes 81.9% B. No

27. Would it be necessary for the recipient of the appointment to acknowledge receipt or approve of the appointment made by you on an automated appointment system?

56.0% A. Yes 43.6% B. No

28. How many separate databases (or files of information which could be developed into a "database") do you maintain either automatically or manually? (See definition of a database in PART I if necessary.)

39.8% A. None (go to item 34)
7.8% B. 1 (n=93)
8.3% C. 2 (n=99)
6.6% D. 3 (n=79)
37.5% E. 4 or more (n=448)

93+2(99)+3(79)+4(448)=2320 databases

29. Estimate the average number of pages required for each database.

31.8% A. Fewer than 10 (n = 246) 5(246) + 12.5(196) + 38(75) + 50(125) = 12,780
25.4% B. 10-25 pages (n = 196)
9.7% C. 26-50 pages (n = 75)
16.2% D. More than 50 pages (n = 125)
16.9% E. Do not know (n = 131)

30. The frequency with which my database(s) should be updated is

32.1% A. Daily
27.6% B. Weekly
18.9% C. Monthly
12.7% D. Quarterly
8.7% E. Seasonally or annually

31. How often would you or others need to refer to or use your database(s)?

65.9% A. Daily
20.1% B. Weekly
6.3% C. Monthly
4.2% D. Quarterly
3.5% E. Seasonally or annually

32. Do you need to keep a log of how much your database is used or who used it?

76.6% A. No
6.8% B. Yes, amount of time it was used
10.5% C. Yes, who used it
3.7% D. Yes, number of times it was used
2.5% E. Yes, when it was used

33. Most people using my database(s) would want to

36.2% A. View it and copy a portion of it
4.1% B. Copy the entire database
3.7% C. Transmit a copy to someone else
36.2% D. Simply view the contents
19.9% E. Make inputs to my database

34. Could you take a commercial software package and make it run using only the instruction manuals provided?

13.8% A. No
26.3% B. Maybe
23.1% C. Most likely
20.7% D. Yes
16.2% E. Do not know, I have never tried

35. In order to get help to run a standard (commercial) microcomputer program, how far would you have to go:

24.8% A. I do not know.
33.4% B. In my immediate work area.
24.6% C. Within a convenient distance in my building.
7.7% D. In my building, but getting help would probably not be convenient.
9.5% E. Outside my building.

36. How do you feel about being willing to put in the time to learn the basic operation of automated equipment?

2.8% A. I do not want to have anything to do with it.
11.9% B. I am not looking forward to it, but realize that I need to learn.
27.0% C. I am a little awed by the technology, but look forward to learning.
48.6% D. I am already learning or am really looking forward to learning more.
9.6% E. I am already very familiar with such equipment.

37. Would it be necessary to have a printer in your office for a microcomputer to be useful? (That is, are hardcopies required, or could you use the information from a monitor--computer "TV" screen?)

76.4% A. Yes 23.3% B. No (go to item 39)

38. If a printer is necessary for your office, which type would meet minimum requirements.

28.7% A. Dot Matrix (This is "dot matrix" print.)
68.6% B. Letter-quality (This is "letter-quality" print.)
2.5% C. Other (Specify) _____

39. How many pages of forms, reports, Items of Interest (IOIs), Staff Summary Sheets, etc. do you individually use in your office per day which are subsequently sent to another office on base?

26.0% A. None (n = 308)
38.4% B. 1-3 (n = 455)
13.5% C. 4-5 (n = 160)
6.2% D. 6-9 (n = 74)
15.9% E. 10 or more (n = 188)

$1.5(455) + 4.5(160) + 7.5(74) + 10(188) = 3837.5$

$\bar{X} = 2.476$

40. Automating the flow of information used in my work would:

10.8% A. Probably take more time than it would save.
60.5% { 29.5% B. Save me from a few minutes up to an hour a day.
26.3% C. Save me up to one to three hours per day
4.7% D. Save me four or more hours per day.
28.8% E. Do not know or not applicable..

41-46. USE THE FOLLOWING ANSWERS FOR ITEMS 41-46 TO INDICATE HOW MUCH TIME PER DAY YOU SPEND ON EACH TASK.

$\bar{X}$ **A. NONE B. UP TO 30 MINS C. 30 MINS-1 HR D. 1-4 HRS E. MORE THAN 4 HRS**

$\bar{X}$		A	B	C	D	E
2.17	41. Searching files for retrieval of information	263	593	242	92	14
2.13	42. Putting material in files	292	618	162	106	24
1.59	43. Scheduling appointments	597	527	58	13	5
2.23	44. Taking and delivering telephone messages	241	589	243	115	16
2.69	45. Editing (for readability, grammar, typos)	234	323	296	281	68
2.31	46. Changing information from one format to another. (For example: recompiling data or words to complete a report, or provide backup for a paper)	366	362	230	202	33

reported by number responding per category (i.e. not percentage)

47-63. Use the following answers to indicate the frequency with which you would anticipate using the information sources listed in items 47-63 if they were available electronically in your office.

$\bar{X}$ **A. NEVER B. SELDOM C. SOMETIMES D. FREQUENTLY E. CONSTANTLY**

2.19 47. Air University Library Card Catalog

1.97 48. Air University base statistical information (e.g., "AU Facts and Figures")

2.13 49. Videotapes from AUTV or base AV library

2.60 50. Graphic production capability (for briefings, lectures, meetings, reports, etc.

2.89 51. Special full-text files such as regulations, directories, etc. (with this capability, only one place updates information, your on-line copy is automatically maintained)

2.01 52. Commercial databases (e.g., New York Times Database, The SOURCE, ERIC)

2.21 53. Electronically published professional journals

2.56 54. Computer-assisted Instruction (for drill and practice, perhaps on how to use a microcomputer or a host of other topics)

2.33 55. Network links to other on-campus AU organizations for data or correspondence transfer (such as sharing speakers, research data, copyright releases, instructional materials, or file transfers)

$\bar{X}$

56. Network links to outside Maxwell (e.g., Air Staff, AFIT) to forward reports, check on funding, students, or personnel information with Air Staff, AFIT, MPC or other areas.

2.19

57. Electronic mail (to avoid the "leave a message that I called to return the call she made to me this morning.")

2.60

58. Recorded PME lectures for makeup or review (by students or faculty, or for new faculty training)

1.99

59. Videoconferencing (to save TDY funds for brief meetings)

1.77

60. Secure videoconferencing (as above, but used when secure communication links are required)

1.35

61. Teleconferencing (to save TDY funds, but used where audio only is sufficient)

1.71

62. Secure teleconferencing (as above, but used when secure communication links are required)

1.37

63. Automated calendars

2.56

64. For your position alone, how much time could be saved if the above services were available? $1(160) + 2.5(280) + 5.5(162) + 8(101) = 2559$ hours/wk

41.8% A. None, or do not know (n=504)
13.3% B. 1 hour/wk (n=160)
23.2% C. 2-3 hours/wk (n=280)
13.4% D. 4-7 hours/wk (n=162)
8.4% E. 8 hours or more/wk (n=101)

$\bar{X} = 2.33$

65. To automate your tasks, do you think it will be necessary to create unique software as opposed to being able to use commercially available software packages?

16.5% A. Yes 39.7% B. No 43.4% C. Do not know

66. What type of information would you need to use in a local area network (LAN)? (See definition of LAN in PART I if necessary.)

46.8% A. Data only
1.3% B. Audio only
4.5% C. Video (one-way or interactive video)
30.8% D. All of the above
16.5% E. A and B above

67-71 Consider automated technologies listed in items 67-71. Which response below best reflects your professional use of each?

A. Already use.
B. Already use, but need expansion or improvement of the system available.
C. Not available now, but is needed for the future.
D. Do not need.
E. Not applicable, or do not know.

Reported as percentage

		%				
		A	B	C	D	E
67.	Word processing	67	34	20	26	8	13
68.	Database management	68	17	16	35	8	24
69.	Information retrieval (including access to large central computers)	69	16	12	45	8	20
70.	Mathematical computation	70	12	9	23	29	27
71.	Computer-assisted instruction	71	9	8	43	15	25

72. How many microcomputers are now used in your immediate office area (division, directorate, etc.)?

49.1% A. None (go to item 83) (n = 585)
23.9% B. 1 (n = 285)
18.2% C. 2-3 (n = 217)
3.4% D. 4-5 (n = 41)
5.3% E. More than 5 (n = 63)

73. How many people share the use of those microcomputers?

5.5% A. 1
20.7% B. 2-3
15.0% C. 4-5
52.4% D. More than 5
6.4% E. ?

74. Are any of those microcomputers interconnected?

26.6% A. Yes 69.8% B. No

75. Do you have ready access to a microcomputer for <u>your</u> use?

55.7% A. Yes 42.9% B. No

76. On the average, how much are each of the currently installed microcomputers in your office area used each day?

10.1% A. less than 30 minutes
8.0% B. 30-40 minutes
17.1% C. 1-2 hours
62.8% D. over 2 hours
2.1% E. ?

65

77-83. Indicate whether you have each of the following accessories attached or available to the microcomputers in your office area? (Mark A for YES and B for NO)

		YES	NO
77. Graph plotter	77	21%	78%
78. Color monitor	78	12%	86%
79. Communication modem	79	32%	67%
80. Light pen, "mouse", or graphics tablet	80	6%	93%
81. Dot matrix printer	81	50%	49%
82. Letter quality printer	82	52%	46%

83. What would be the maximum tolerable downtime per week if your office was completely automated?

19.9% A. Up to 2 hours
12.8% B. 3-4 hours
7.7% C. 5-7 hours
8.4% D. 1 to 1 1/2 days
51.2% E. Do not know

$\bar{X} = 3.59$

84. How much growth, if any, do you anticipate in your information production or information use over the next 5 years?

25.3% A. None (go to item 87)
12.2% B. Up to 10%
20.7% C. 10-20%
21.1% D. 20-40%
20.7% E. 40% or more

$\bar{X} = 3.0 \cong 15\%$

85. How much of the anticipated growth could be satisfied by using automated information technologies?

4.4% A. None
16.4% B. 10%
21.5% C. 20%
16.0% D. 40%
41.7% E. More than 40%

$\bar{X} = 3.74 \cong 35\%$

86. Consider your anticipated growth in workload. If an automated system sufficient for your current workload were installed today, how long do you estimate it would be sufficient? (Consider, for example, whether your office is expecting to add new responsibilities in the future. Will your information base continue to grow, or will your information be purged periodically?)

14.8% A. 1 year
17.7% B. 2 years
23.1% C. 3 years
23.3% D. 4-5 years
21.1% E. More than 5 years

$\bar{X} = 3.18$

87. Would you ever need to distribute copyrighted materials on local networks or make copies of copyrighted graphics via automated office systems?

24.9% A. Yes 44.1% B. No (go to item 89) 30.5% C. Do not know (go to item 89)

88. If you answered "yes" above concerning use of copyrighted materials, do you know what you should do?

29.4% A. Yes, I do 48.5% B. No, I do not 21.7% C. I think so

89. Would any of the materials (documents) you would send or receive via an automated information system need to be protected so that others on-line could not view them or get a print out of them?

38.4% A. Yes 32.7% B. No 28.8% C. Do not know

90. Consider the future as well as the present. What offices in what buildings **within Air University** do you most frequently send written information to, and receive information from? (Please provide complete office symbol. For example, AU/XPZ in 800)

MOST OFTEN SEND TO			MOST OFTEN RECEIVE FROM		
OFF SYMBOL		BLDG NO	OFF SYMBOL		BLDG NO
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____

See Sample Charts page 11-12.

91. Where **outside Air University** do you most frequently send written information to or receive information from? (On Maxwell and Gunter please provide building number. For other bases, general descriptions may be used in place of building numbers. For example, AF/MPK in Pentagon, or ATC/ED in Randolph AFB.)

MOST OFTEN SEND TO			MOST OFTEN RECEIVE FROM		
OFF SYMBOL		BLDG NO/ LOCATION	OFF SYMBOL		BLDG NO/ LOCATION
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____
_____	in	_____	_____	in	_____

See Sample Charts page 11-12.

92. If you were unable to describe your business interactions on the two previous items, do you need connections to all levels of all AU organizations on Maxwell and Gunter? That is, do you need to be able to communicate with anybody at any level of an AU organization?

A. Yes, frequently 11.4% B. Yes, but not frequently 35.5% C. No 53.0%

93. Assume a real Star Wars-type environment. If everything is possible and affordable, what are the most exotic things you can think of for your office that would improve work environment?

Actual text of all responses available in AU/XPZ.

Responses ranged from "We have a Honeywell that's all we need" to "robot dentists" and other robots to perform various tasks.

RETURN YOUR ANSWER SHEET ALONG WITH THIS SURVEY TO

AU/XPZ (DR REED)
BUILDING 800
MAXWELL AFB, AL 36112-5001

FOR HELP
5157 or 7423

68

DESCRIPTIVE ANALYSIS OF FUTURE TECHNOLOGICAL NEEDS IN A MILITARY UNIVERSITY

Air University presents professional military education (PME) and continuing professional education (PCE) to Air Force Officers, noncommissioned officers, and civilians throughout the Department of Defense and some other federal components. A thorough needs analysis is a basic requirement for any major Air Force purchase. Therefore in an effort to get a complete picture of what our future workplace technologies should include at Air University, a survey was administered to all permanently assigned personnel. Objectives of the study were to determine exactly what personnel perceived their needs to be for a local area network (LAN), for future technologies for presenting PME and PCE curricula, and for achieving the necessary staff work of support organizations. There were 1211 respondents who completed the survey and provided perceptions of technological needs, the savings possible by using these capabilities, and their attitudes toward the use of technologies to accomplish their jobs. Future analysis of the survey data will also allow mapping of the external and internal data flow at Air University.

The thoroughness of the study will allow an accurate needs analysis and description of contract requirements as well as indirect estimations of time and cost savings to be used in the justification for contract requirements. This is only one in a series of planned efforts to make Air University become the completely automated university needed to serve its worldwide student population.

Estimates of the amount of training which will be necessary before we can embark on a completely automated information network can also be derived. Survey information can be stratified by whether respondents are officers, NCOs, or civilians; by organization or school to which individuals are assigned; and by the type of job they perform.

Respondents indicated the frequency with which they would anticipate needing seventeen different advanced technologies. A rank ordering of their needs is provided in survey results. The survey also addressed requirements for protection or confidentiality of information, the tolerable downtime acceptable for automated information systems indifferent organizations, and expected information growth in the different organizations.

This presentation will describe the data available from this survey and its proposed use in the development of the Air University Distributed Information System (AUDIS).

DOROTHY D. REED, Ph.D.
Air University Headquarters
Maxwell AFB AL 36112-5001